Associations Between Global Diet Quality Score (GDQS) and Nutritional Status Among Rural Pregnant Women in Amhara Region, Ethiopia

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Objectives: Nutritionally adequate diet during pregnancy is essential to promote the nutrition and health of pregnant women and their fetuses, but there are few measures to assess diet quality. We examined the associations of a new metric, the Global Diet Quality score (GDQS), with nutritional status among pregnant women in rural Amhara, Ethiopia.

Methods: We used baseline dietary data among 2363 pregnant women at $\leq$ 24 weeks' gestation enrolled in the Enhancing Nutrition and Antenatal Infection Treatment for Maternal and Child Health (ENAT) study from July 2020 to December 2021. The GDQS was generated using the weekly consumption of 25 food groups. We assigned 0–1 serving/wk (0 point), 2–3 servings/wk (1 point), and $\geq$ 4 servings/wk (2 points) for 16 healthy foods, and the scoring was reversed for 7 unhealthy foods. One point was given only for 2–3 servings/wk of red meat and whole milk. Points for each group were summed (0–44 points) and categorized into quintiles. Multivariate linear regression or generalized linear models were used to evaluate the association of GDQS with nutritional status: BMI (continuous), underweight (BMI $<$ 18.5 kg/m^2 vs. $\geq$18.5), overweight (BMI $>$ 25.0 vs. $\leq$25.0), MUAC (continuous; MUAC $<$23 cm vs. $\geq$23.0 cm), hemoglobin concentration (continuous; anemia $<$11 g/dl), systolic and diastolic blood pressure (BP, mmHg), and hypertension ($\geq$130 systolic BP or $\geq$ 85 diastolic BP). Models were adjusted for socioeconomic and demographic characteristics and health center location.

Results: In the ENAT cohort, at enrollment (mean 16.6 weeks' gestation) 17% of pregnant women were underweight, 4.6% were overweight, 28.7% had MUAC $<$ 23.0 cm, 5.8% were anemic, and 2.2% had hypertension. The mean (SD) GDQS was 18.2 (2.5). GDQS was negatively associated with underweight (RR = 0.96 of BMI $<$ 18.5 per 1 point GDQS increment; 95%CI: 0.93, 0.99). GDQS was positively associated with MUAC (continuous: $\beta = 0.05$, P = 0.046) and negatively associated with the odds of MUAC ($<$23 cm) (RR = 0.97 of MUAC $<$ 23 per 1 point GDQS increment; 95%CI: 0.94, 0.99). GDQS or GDQS quintile were not associated with hemoglobin concentration, anemia, BP, and hypertension.

Conclusions: GDQS was positively associated with maternal BMI and MUAC among pregnant women in rural Ethiopia, however, did not indicate any association with overweight or diet-related morbidity.

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